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(54) Stackable or nestable containers

(57) A container 10 constructed to nest with another container of identical construction at a low level is provided with stacking bales 12 for supporting an upper container 10 of identical construction selectively at a high level or at an intermediate level between the high and low levels. The bales 12 can be moved out of the way to permit low level nesting or selectively positioned for high or intermediate level stacking.

FIG.1

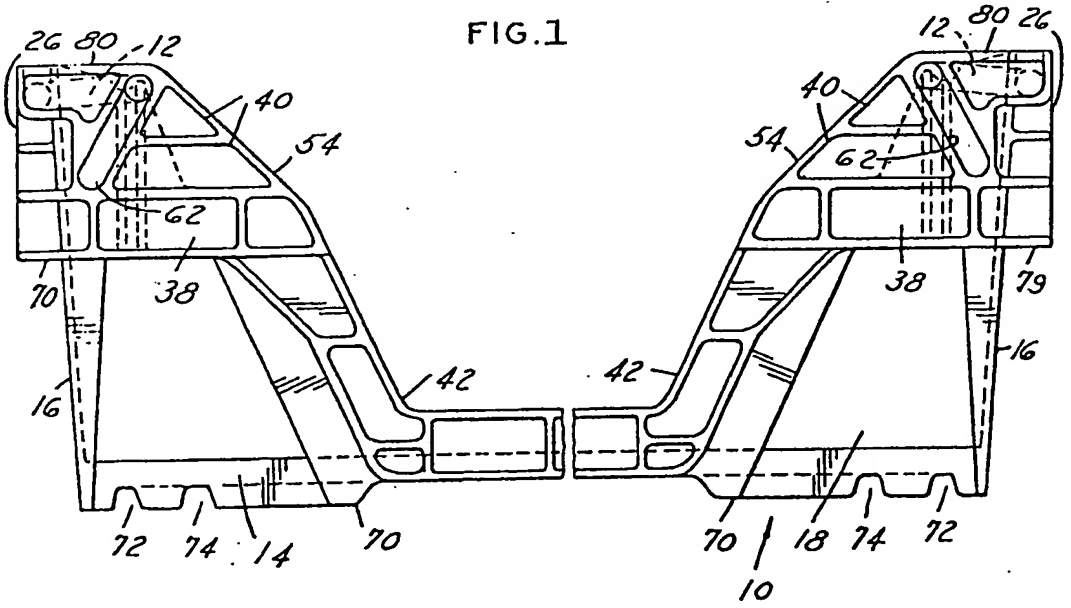

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FIG.1

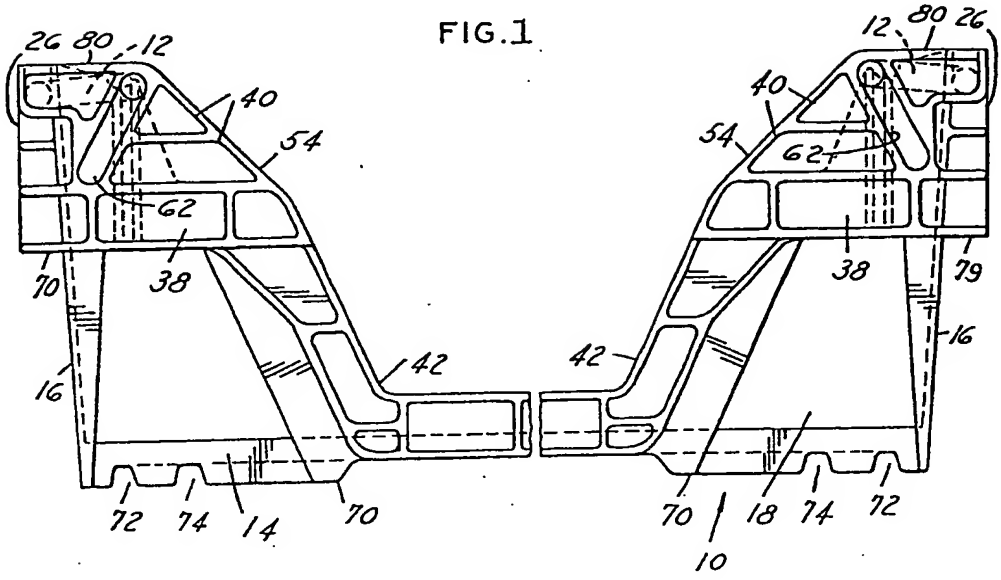


FIG.4

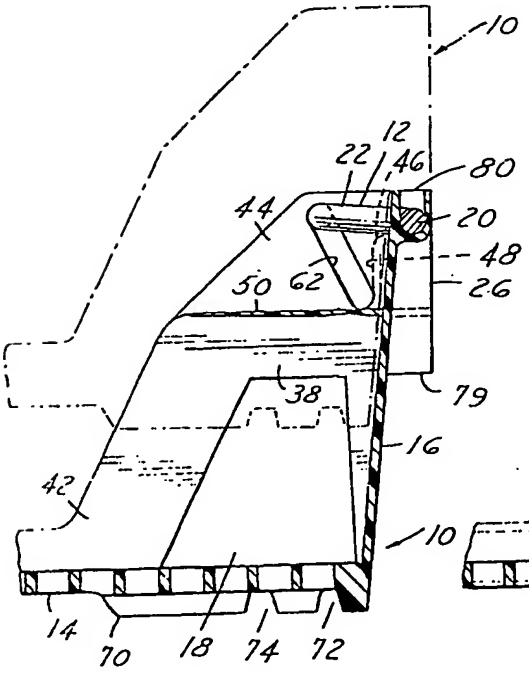
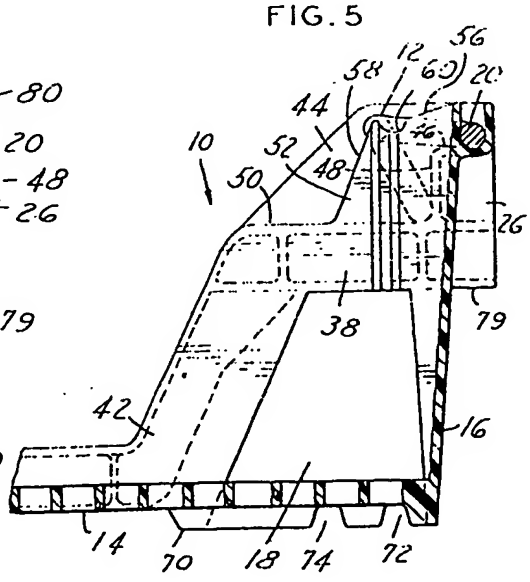


FIG.5



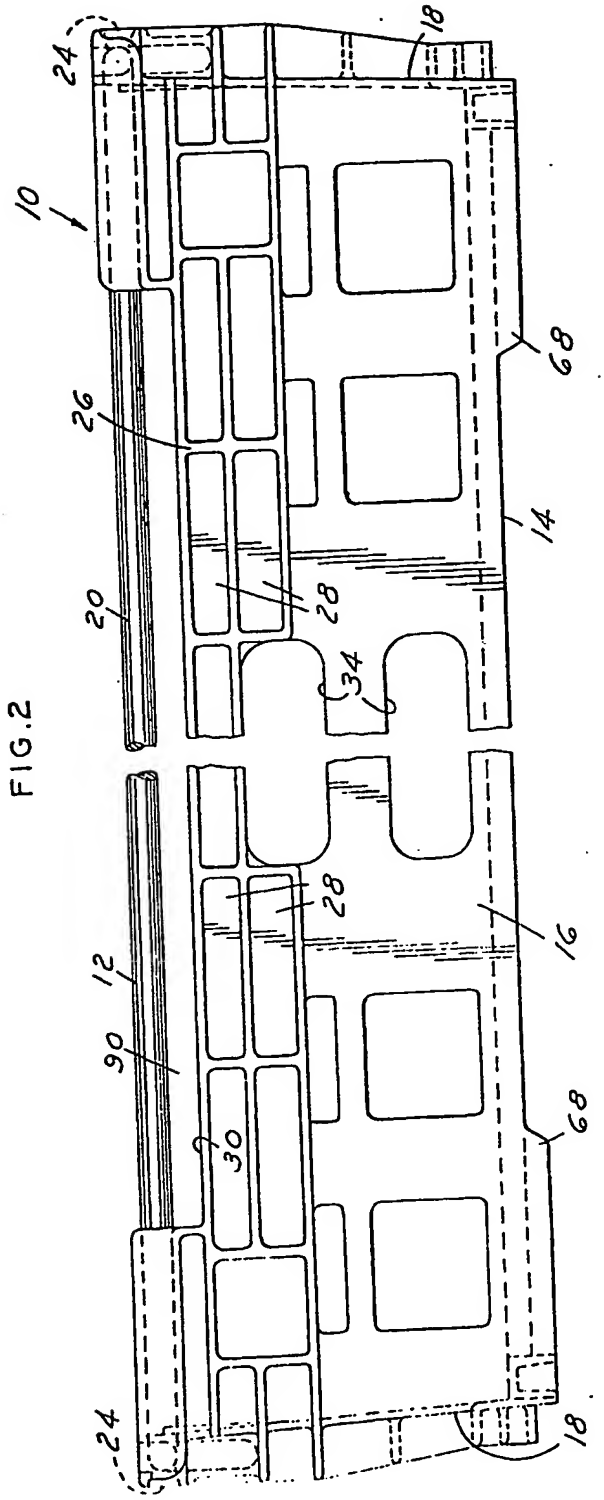


FIG.2

FIG.3

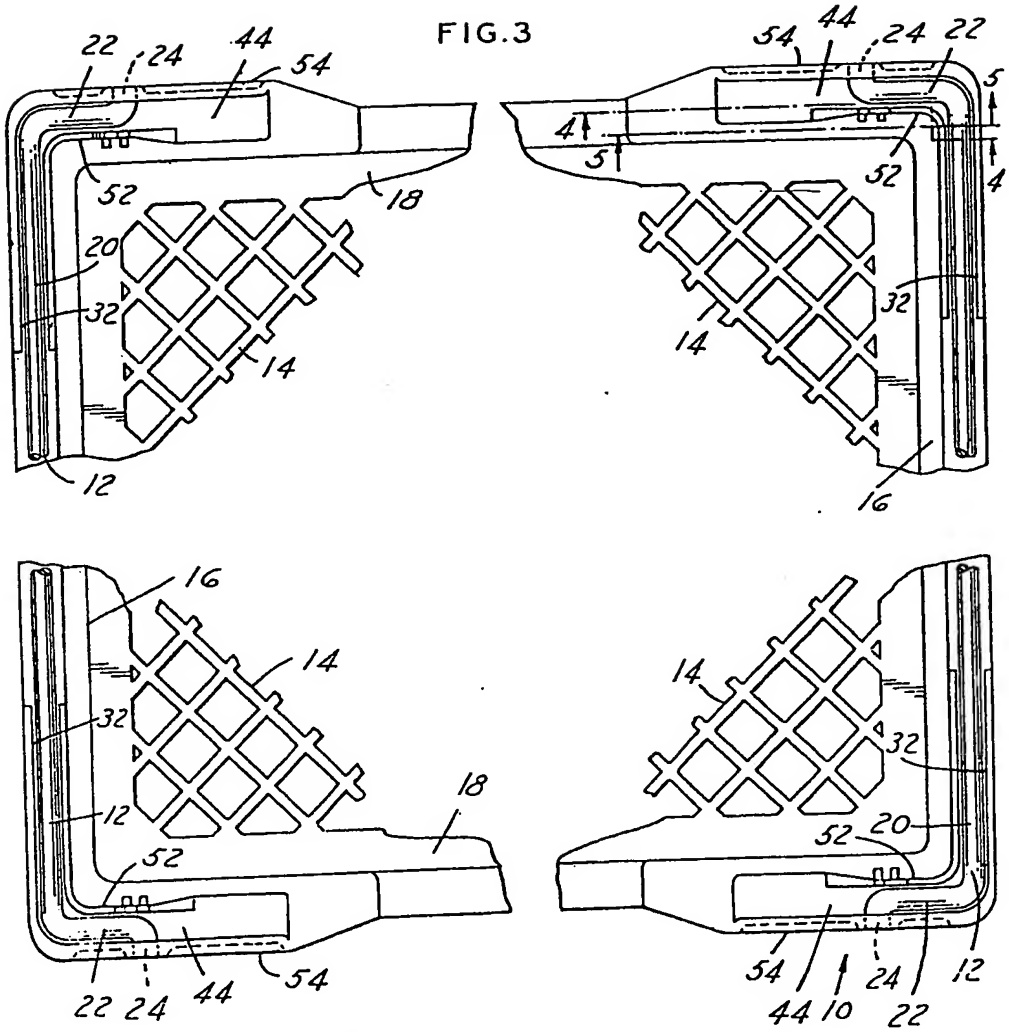

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FIG.8

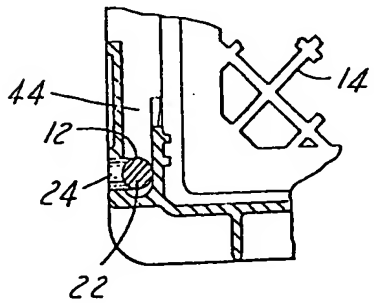
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FIG.6

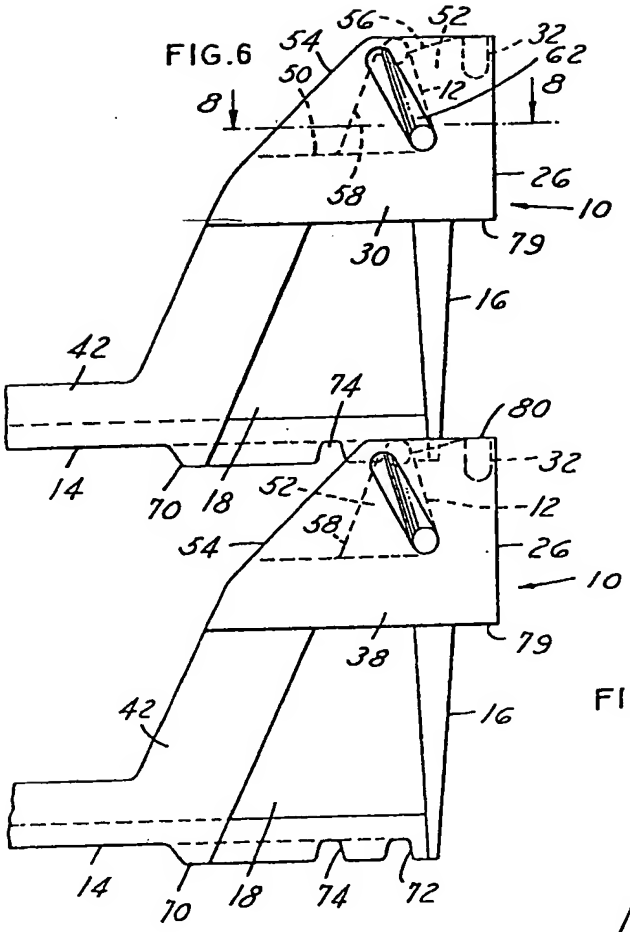
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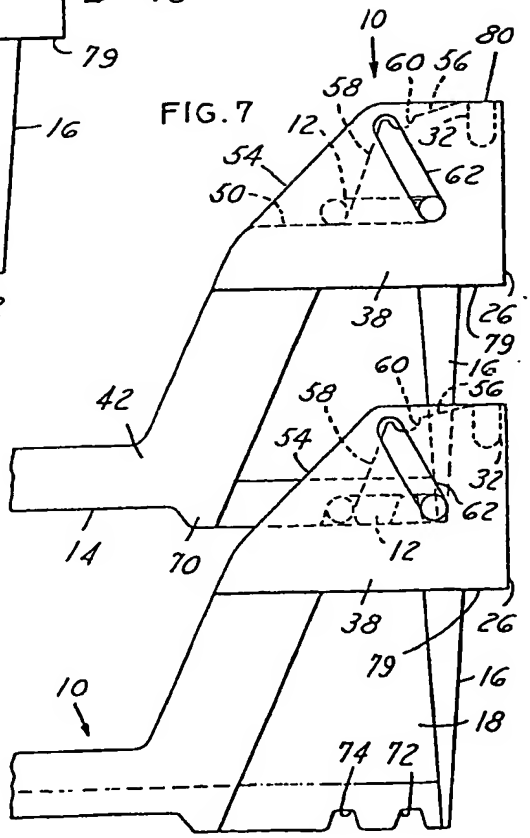
FIG.7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SPECIFICATION

An open top container

This invention relates generally to containers and refers more particularly to a container adapted to nest or stack with another container of identical construction at three different levels.

The container of this invention is adapted to nest with another container of identical construction or to stack therewith at two other levels above the nesting level. The term "nesting" is used to describe the low level relationship between two containers although it will be understood that in a broad sense such containers are "stacked" even when in this condition.

The present invention provides an open top container having a bottom wall, side walls extending upwardly from opposite sides of said bottom wall, said side walls being constructed such that said container may receive an upper container of identical construction in nested relation therewith at a low level, and stacking means associated with said container for supporting an upper container of identical construction in stacked relation thereon selectively at a high level and at an intermediate level between the high and low levels, said stacking means comprising a pair of bales, and means mounting said bales on said container for movement from a first position adapted to support an upper container of identical construction at said high level, to a second position adapted to support an upper container of identical construction at said intermediate level, and to a third position adapted to clear an upper container of identical construction for nesting at said low level.

The container will preferably nest or stack with another container of identical construction whether similarly oriented therewith or turned end for end.

Other features of the invention will become more apparent as the following description proceeds, especially when considered in conjunction with the accompanying drawings, wherein:

Figure 1 is an end view of a container embodying our invention.

Figure 2 is a side view of the container shown in Fig. 1.

Figure 3 is a top plan view with parts broken away.

Figure 4 is a fragmentary sectional view taken on the line 4–4 in Fig. 3, showing in dot-dash lines a second container in a low level nesting relationship.

Figure 5 is a fragmentary sectional view taken on the line 5–5 in Fig. 3.

Figure 6 is a fragmentary elevational view showing two containers in stacked relation at the high level.

Figure 7 is similar to Fig. 6 in which the two containers are shown in stacked relationship at the intermediate level.

Figure 8 is a fragmentary sectional view taken on the line 8–8 in Fig. 6.

Referring now more particularly to the drawings, the container 10 is rectangular and has a pair of stacking bales 12. The entire container, with the exception of the bales, is of one piece, integral construction formed of any suitable material, preferably plastic, such for example as molded polyethylene or polypropylene. The bales may be of any suitable material, such for example as steel. The containers of this invention may be used for any purpose but are in this instance designed primarily as bakery containers for bread, cakes, rolls, and the like. All of the containers shown in the several views are identical in construction.

The container 10 has a rectangular horizontal bottom wall 14, side walls 16 and end walls 18. The side walls 16 extend upwardly in diverging relation to each other from opposite side edges of the bottom wall, and the end walls 18 extend upwardly in diverging relation to each other from opposite end edges of the bottom wall and are joined to the side walls at the corners of the container. The side and end walls diverge in order to facilitate nesting, and preferably they diverage at the same angle, as shown.

Each bale 12 is in the form of an elongated rod of uniform circular cross-section through its length, the main mid-portion 20 of which is about equal in length to the length of a side wall. At the end of the mid-portion 20, the rod has end portions 22 turned at substantially a right angle to the mid-portion and terminating in pivot pins 24 which are turned outwardly so as to extend on a common axis parallel to the mid-portion 20 of the rod.

The upper portion of each side wall throughout its length is thickened laterally outwardly, the thickened portion being indicated at 26. This thickened portion is recessed where indicated at 28 to provide a cellular appearance in elevation as shown in Fig. 2 for the purpose of reducing weight but retaining the added strength provided by thickening. The thickened upper side wall portion 26 is cut down from the top edge where indicated at 30 between the ends of the side wall. The top edge of the thickened side wall portion at each end of the cut down mid-portion 30 is formed with an elongated upwardly opening groove 32 extending from the cut down portion 30 to the end of the side wall at the corner of the container. The side walls 16 are also provided with hand holes 34 for convenience in lifting the container.

Each end wall is cut down from the top edge of the container so that the top margin is generally in the configuration shown in Fig. 1, being at the level of the top edge of the

side walls near the corners and from there extending downwardly more or less in the form of a U. This configuration makes the contents accessible when several containers are stacked together. The upper portions of each end wall near the corners are thickened where indicated at 38, forming a right angle continuation of the thickened portions 26 of the side walls. The thickened portions 38 of the end walls, like the side walls, are recessed where indicated at 40 to form the cellular appearance shown in Fig. 1 for the purpose of reducing weight but retaining the added strength due to the thickened construction. The thickening of the end wall extends from the corner portions 38 downwardly in the shape of a U as shown in Fig. 1 and as indicated at 42.

The upper edges of the thickened portions 42 are formed with upwardly opening grooves 44 which form right angle continuations of the grooves 32 in the side walls. The bottoms of the grooves 44 near the corners of the container are designated 46 and form continuations of the bottoms of grooves 32 on the same level as the latter. The groove bottoms 46 extend away from the corners horizontally, then downwardly at a substantial angle as shown at 48 and then continue horizontally in a shelf like portion 50. The inner wall 52 of each groove 44 is defined by a portion of the end wall proper of the container. The outer wall is designated at 54.

The inner wall 52 of each groove 44 has an upper edge near the corner designated 56 which extends away from the corner at a downward slope, then downward at 58 at a substantial angle to the level of the shelf like portion 50 where it ends. The upper edge 56 has a notch or recess 60 near its inner end.

The outer wall 54 has an elongated slot 62 which extends upwardly and inwardly at an angle to the vertical which in this instance is about 24°. This orientation of the slot, while preferred, may vary and in some instances may even be turned in the opposite direction from the vertical. The width of the slot is equal to or slightly greater than the diameter of the bale so that the bale ends or pins 24 may be pivotally and slidably received therein, as shown.

The container has feet defined by flanges 68 and 70 at each corner extending downward from the plane of the underside of the bottom along the side and end walls. Each flange 70 along the end walls has a notch or recess 72 in the bottom edge which is directly below the notch or recess 60 in the upper edge 56 of wall 52 when viewed as in Figs. 1 and 5–7. Each flange 70 also has a notch or recess 74 in the bottom edge which is directly below the point designated 76 where the edge 58 of wall 52 ends and merges with the shelf like portion 50 when viewed as in Figs. 1 and 5–7.

The horizontal top edges 80 of the side and end walls provide nesting seats to be engaged by the horizontal lower edge portions 79 of the thickened portions 26 and 38 of an upper container to support the same in nested relationship at a relatively low level. There are vertical reinforcing ribs 81 and 82 on the inner surfaces of end walls 18 extending adjacent to and beneath notches 60.

Each bale 12 is assembled with the container by having one pivot end 24 engaged in the slot 62 adjacent one end of a side wall and the other pivot end engaged in the slot 62 adjacent the other end of the same side wall. When the bales 12 have their pivot ends 24 in the upper ends of the slots 62, they may be swung outwardly to an out of the way position shown in Figs. 3, 4 and 5 in which the mid-portion 20 thereof rests in the grooves 44 in the upper edge of the side wall. A second position is shown in Fig. 6 in which the pivot ends 24 of the bale are disposed at the lower ends of the slots 62 and the mid-portion 20 is engaged in the recesses 60. A third position is shown in Fig. 7 in which the pivot ends 24 are engaged in the lower ends of the slots and the mid-portion 20 is supported upon the shelf-like portions 50.

Two containers may be nested with one another as shown in Fig. 4 by moving the pivot ends of both bales to the upper ends of their slots and swinging the bale outward so that the mid-portion 20 rests in the notches 60. The upper container may than be lowered into the lower container, which is permitted by the flaring or diverging of the side and end walls, until it comes to rest with the lower edges 79 of its thickened wall portions engaged and seated upon the upper edges 80 of the lower container. This is the nested or relatively low level position of the containers.

In order to support a container at the relatively high level of Fig. 6, each bale has its pivot ends disposed in the lower ends of slots 62 and the mid-portion 20 engaged in recesses 60. An upper container may then be lowered until the notches 72 in the bottom flanges 70 come to rest upon the mid-portion 20 of each bale. This is the high level stacking position.

Two containers may be stacked at an intermediate level between the high and low levels, in the condition shown in Fig. 7, in which case the pivot ends 24 of each bale are disposed in the lower slot ends and the bale mid-portion 20 rests on the shelf-like portions 50. An upper container is then lowered until the recesses 74 rest upon the mid-portion 20 of the bales.

The upper container will nest or stack with a lower container as shown in Figs. 4, 6 and 7 whether oriented the same as the lower container or turned end for end.

The bottom edges of the cut down portions 30 of the side walls 16 are substantially

below the mid-portion 20 of the bales 12 when the bales are in the position of Figs. 1–5, to provide a space 90 (see Fig. 2) permitting automated equipment, or an operator's hands, to reach under the mid-portion 20 of the bales and move the bales to either of the two stacking positions shown in Figs. 6 and 7, or to move the bales back to the position of Figs. 1–5 to receive an upper nested container.

CLAIMS

1. An open-top container having a bottom wall, side walls extending upwardly from opposite sides of said bottom wall, said side walls being constructed such that said container may receive an upper container of identical construction in nested relation therewith at a low level, and stacking means associated with said container for supporting an upper container of identical construction in stacked relation thereon selectively at a high level and at an intermediate level between the high and low levels, said stacking means comprising a pair of bales, and means mounting said bales on said container for movement from a first position adapted to support an upper container of identical construction at said high level, to a second position adapted to support an upper container of identical construction at said intermediate level, and to a third position adapted to clear an upper container of identical construction for nesting at said low level.

2. A container as defined in claim 1, wherein said bales extend along said respective side walls and are supported on said container by pin and slot connections.

3. A container as defined in claim 1, wherein said mounting means for said bales comprise means providing elongated slots near each end of each side wall, and pins on the ends of said bales engaging said slots.

4. A container as defined in claim 3, wherein said mounting means comprise means for supporting said bales in said first position when said pins are engaged in one end of said slots, means for supporting said bales in said second position when said pins are engaged in said one end of said slots, and means for supporting said bales in said third position when said pins are engaged in the opposite end of said slots.

5. A container as defined in claim 1, including end walls extending upwardly from said bottom wall between said side walls, said end walls having means providing elongated slots near each end of each side wall, pins on the ends of the said bales engaging said slots, said mounting means comprising means on said end walls for supporting said bales in said first position when said pins are engaged in one end of said slots, means on said end walls for supporting said bales in said second position when said pins are engaged in said one end of said slots, and means on said side walls for supporting said bales in said third position when said pins are engaged in the opposite ends of said slots.

6. A container as defined in claim 1, 4 or 5, said container having seat portions adapted to receive the bales of a lower container of identical construction when stacked thereon at said high and intermediate levels.

7. A container as defined in claim 6, wherein said seat portions are recesses in the underside of said container.

8. A container as defined in claim 1 substantially as hereinbefore described with reference to the accompanying drawings.

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